Amendments to the Claims:

1. (Currently amended) A method of forming a material film, comprising:

providing a chemical vapor deposition (CVD) chamber comprising therein a showerhead coupled to a gas source and a pedestal coupled to a heater, wherein said showerhead is further coupled to a radio frequency (RF) power source;

positioning a substrate on said pedestal;

heating said substrate by said heater;

flowing a nitrogen-containing gas into said CVD chamber, said nitrogen-containing gas being transported to a substrate surface of said substrate and saturatively chemisorbed onto said substrate surface;

shutting down said flow of said nitrogen-containing gas;

flowing a tantalum-containing organic metal precursor gas into said CVD chamber through said showerhead with said RF power source being off, wherein said tantalum-containing organic metal precursor gas reacts with said nitrogen-containing gas that are previously absorbed by said substrate surface; thereby depositing a material film on said heated substrate;

thereafter turning on said RF power source to output a RF power;

flowing an inert gas into said chamber;

in-situ plasma treating said material film within said CVD chamber by providing said RF power to said inert gas; and

removing said substrate out of said CVD chamber.

2. (Original) The method of forming a material film according to claim 1 wherein said substrate is heated to a temperature of 200~600℃ by said heater.

3. (Original) The method of forming a material film according to claim 1 wherein said

substrate is heated to a temperature of 200~300℃ by said heater.

4. (Original) The method of forming a material film according to claim 1 wherein said tantalum-containing organic metal precursor comprises pentakis(dimethylamido) tantalum (PDMAT) ($Ta(N(Me)_2)_5$) and pentakis(diethylamido) tantalum (PDEAT) ($Ta(N(Et)_2)_5$).

5. (Original) The method of forming a material film according to claim 1 wherein said inert gas comprises argon (Ar).

6. (Original) The method of forming a material film according to claim 1 wherein the step of in-situ plasma treating said material film uses argon plasma.

7. (Original) The method of forming a material film according to claim 1 wherein said RF power is between 50~1000 Watts.

8. (Original) The method of forming a material film according to claim 1 wherein said CVD chamber is further coupled to a vacuum pump.

9. (Original) The method of forming a material film according to claim 1 wherein said material layer is tantalum nitride layer.

10. (Original) The method of forming a material film according to claim 1 wherein said material layer is tantalum layer.

11. (Currently amended) A method of forming a tantalum nitride film, comprising:
providing a chemical vapor deposition (CVD) chamber comprising at least therein a

showerhead coupled to a gas source and a pedestal coupled to a heater, wherein said showerhead is further coupled to a first radio frequency (RF) power source;

positioning a substrate on said pedestal;

heating said substrate by said heater;

flowing a nitrogen-containing gas into said CVD chamber, said nitrogen-containing gas being transported to a substrate surface of said substrate and saturatively chemisorbed onto said substrate surface;

shutting down said flow of said nitrogen-containing gas;

purging said CVD chamber with inert gas;

thereafter flowing a tantalum-containing organic metal precursor gas into said CVD chamber through said showerhead with said first radio frequency (RF) power source being off, wherein said tantalum-containing organic metal precursor gas reacts with said nitrogen-containing gas that are previously absorbed by said substrate surface; thereby depositing a tantalum nitride film on said heated substrate;

thereafter turning on said first RF power source to output a first RF power;

flowing an inert gas into said chamber;

in-situ plasma treating said tantalum nitride film within said CVD chamber by providing said first RF power to said inert gas; and

removing said substrate out of said CVD chamber.

12. (Original) The method of forming a tantalum nitride film according to claim 11 wherein said substrate is heated to a temperature of 200~600℃ by said heater.

13. (Original) The method of forming a tantalum nitride film according to claim 11 wherein said substrate is heated to a temperature of 200~300℃ by said heater.

14. (Original) The method of forming a tantalum nitride film according to claim 11

wherein said tantalum-containing organic metal precursor comprises pentakis(dimethylamido) tantalum (PDMAT) ($Ta(N(Me)_2)_5$) and pentakis(diethylamido) tantalum (PDEAT) ($Ta(N(Et)_2)_5$).

15. (Original) The method of forming a tantalum nitride film according to claim 11 wherein said pedestal is further coupled to a second RF power source.

16. (Original) The method of forming a tantalum nitride film according to claim 15 wherein said second RF power source outputs a second RF power of 0~1000 Watts.

17. (Original) The method of forming a tantalum nitride film according to claim 15 wherein said second RF power source is off during said deposition of said tantalum nitride film.

18. (Original) The method of forming a tantalum nitride film according to claim 11 wherein said inert gas comprises argon (Ar).

19. (Original) The method of forming a tantalum nitride film according to claim 11 wherein the step of in-situ plasma treating said tantalum nitride film uses argon plasma.

20. (Original) The method of forming a tantalum nitride film according to claim 11 wherein said first RF power is between 50~1000 Watts.

21. (Original) The method of forming a tantalum nitride film according to claim 11 wherein said CVD chamber is further coupled to a vacuum pump.

22. (Canceled)

23. (Currently amended) The method of forming a tantalum nitride film according to claim [22] 11 wherein said nitrogen-containing gas is ammonia gas.

24. (New) The method of forming a material film according to claim 1 wherein said inert gas, said nitrogen-containing gas and said tantalum-containing organic metal precursor gas are flowed into said CVD chamber through said showerhead.

25. (New) The method of forming a material film according to claim 11 wherein said inert gas, said nitrogen-containing gas and said tantalum-containing organic metal precursor gas are flowed into said CVD chamber through said showerhead.